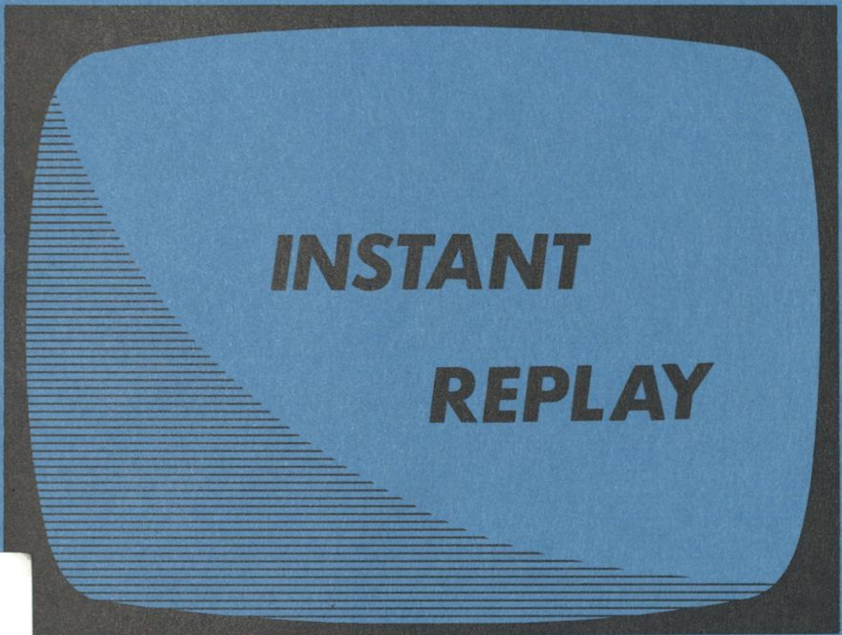
Southern Pacific
Transportation Company

ONE MARKET STREET • SAN FRANCISCO, CALIFORNIA

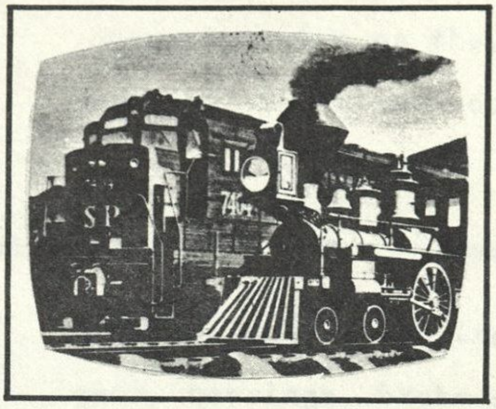
TRAIN INSPECTION



INSTANT REPLAY

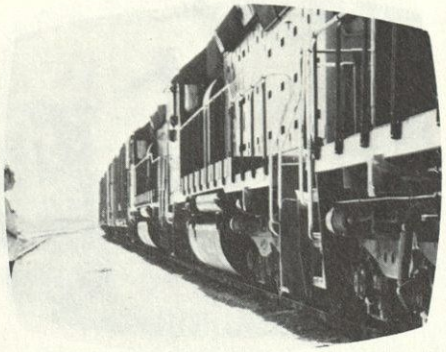
FROM AN
AUDIO-VISUAL
SLIDE-SOUND PROGRAM

AUDIO-VISUAL COMMUNICATIONS
PERSONNEL DEPARTMENT



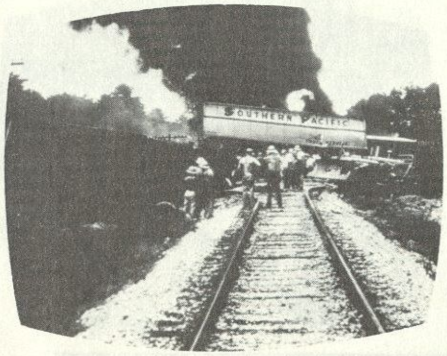
INSTANT REPLAY is a script storyboard of the actual narration and photographs used in audio-visual programs; such as, slide-sound programs, television, or motion pictures. It is designed as a quick source of reference so that you can review any part of the information when and where you want.

After reviewing this information, if any doubt exists about the safety of any procedure or operation, you should immediately contact your supervisor for clarification.



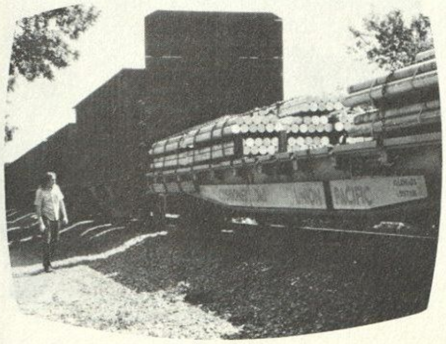
All employes have the responsibility to inspect trains as they travel over 14,000 miles of track each day.

At all stops, a walking inspection of running gear, bearings, brake and draft rigging, and lading must be made on your train as often as practicable, as called for in Rules 827 and 829.

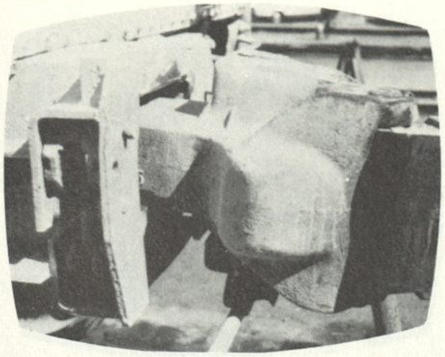


Thorough inspections are mandatory to locate defects which could derail your train.

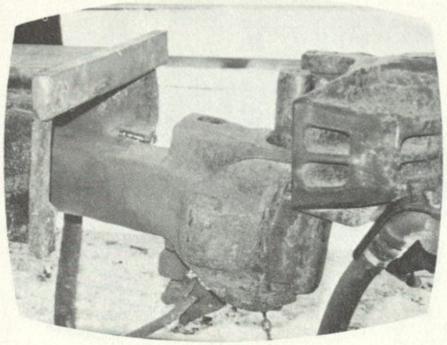
A derailment such as this could result in serious injury or possible loss of life and cost millions of dollars.



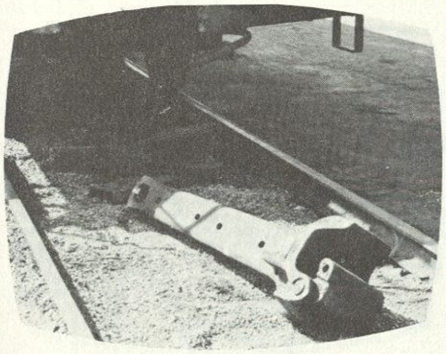
Be on the alert and develop a keen eye for defects which can and will cause derailments.



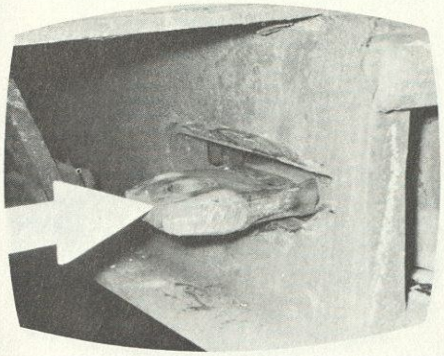
The drawbar area is of great importance as we begin our inspection....Train separation or derailment could be caused by drooping couplers.



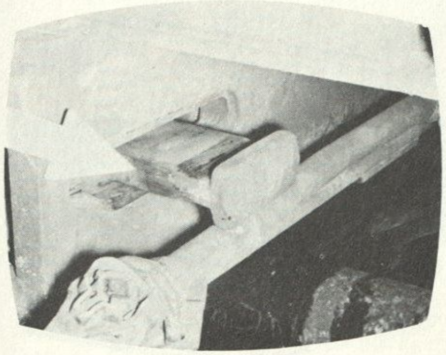
A missing coupler carrier iron is unsafe...



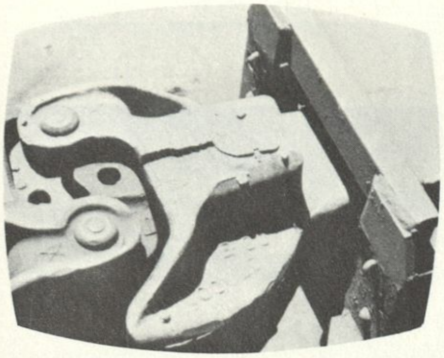
...the drawbar could fall out and cause a derailment.



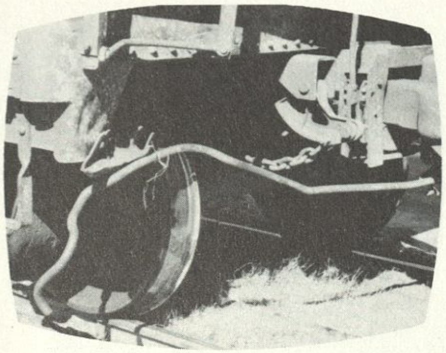
A missing draft key retainer and a loose draft key are indications of trouble ahead.



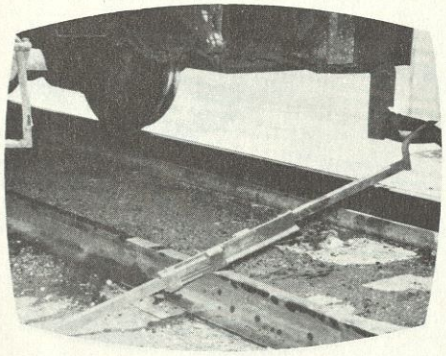
If the draft key works out of the coupler yoke, the coupler will dislodge, resulting in train separation and possible derailment.



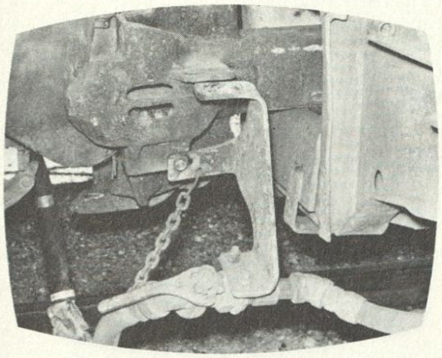
The coupler undergoes a great deal of strain in normal operations. This cracked coupler head could fail completely. A car with a cracked coupler head such as this should be set out.



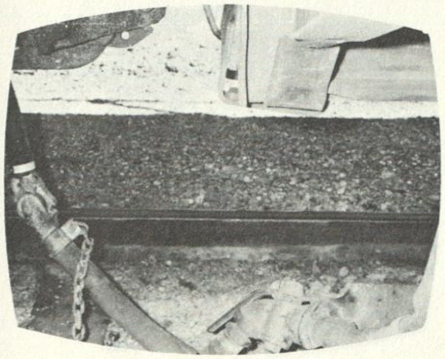
Train separation could result from a severely bent. . .



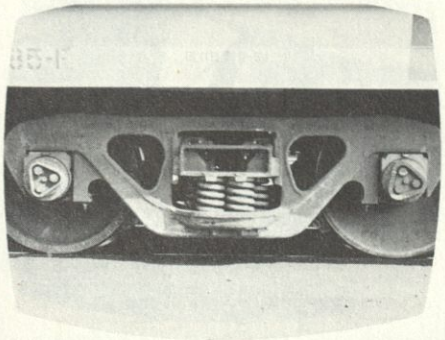
. . . or broken uncoupling lever. Also check the uncoupling lever for missing bolts.



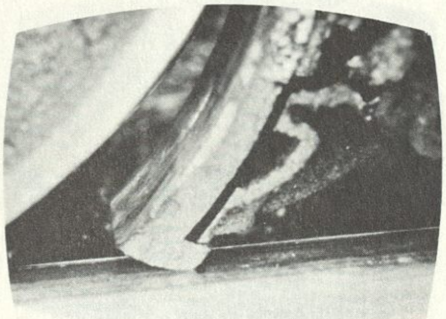
Check the angle cock bracket for missing bolts and hanging loose on coupler head. In this case, the remaining bolt could work loose.



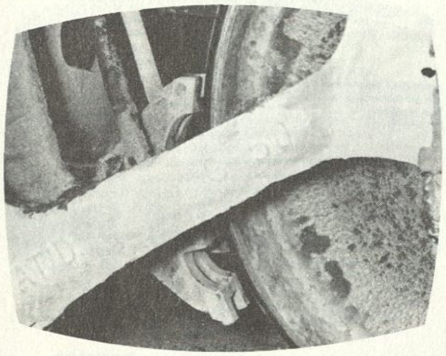
This would cause the angle cock bracket to drop from the coupler head.



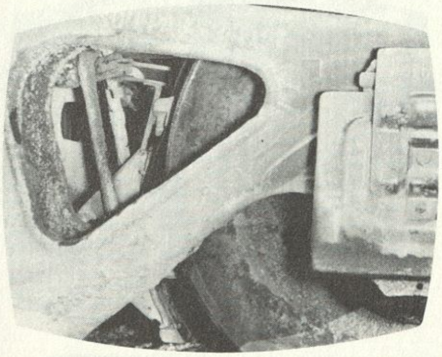
Look the running gear over for defects.



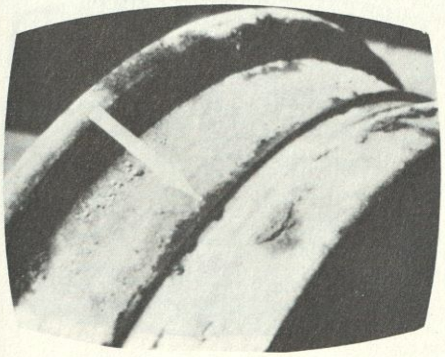
Here we see the complete brake rigging down and riding on the rail. If possible, wire the rigging to the frame to prevent catching in switch points or frogs until you get to a set out point.



A missing brakeshoe. . .

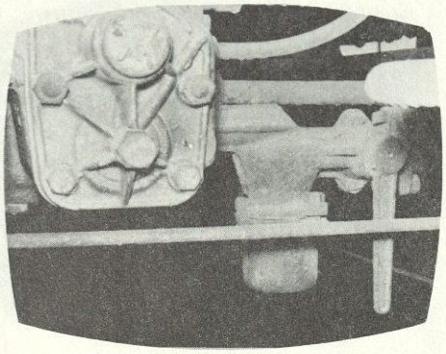


. . . or worn brake shoe would result in insufficient braking and would eventually damage a wheel, as shown here.

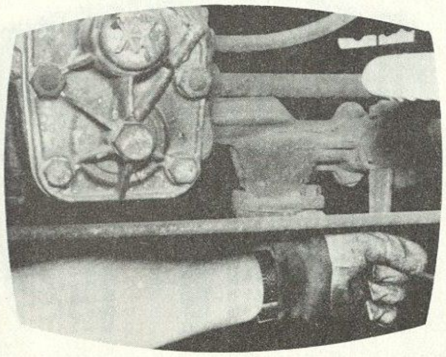


A wheel with this type of defect measuring one-eighth inch or more in depth must be set out as soon as possible.

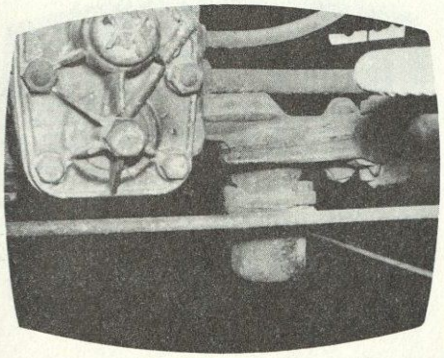
If this brake shoe key were missing, air brakes on the car must be cut out and the car bled off.



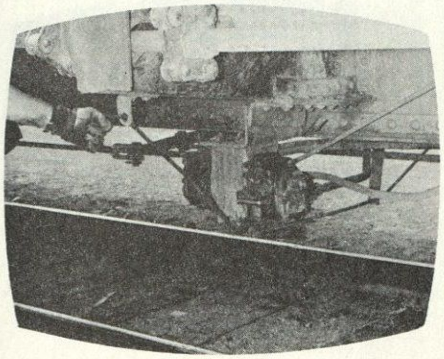
In the previous slides, we have seen brake rigging down or missing, and missing or worn brake shoes. When these types of defects are discovered, air should be cut out on the car and the car bled off.



To cut out the air, turn the cut-out cock handle.



Turn the handle until it is parallel to the branch pipe.



Next, pull the bleed rod until the air is depleted from the car's air brake system.

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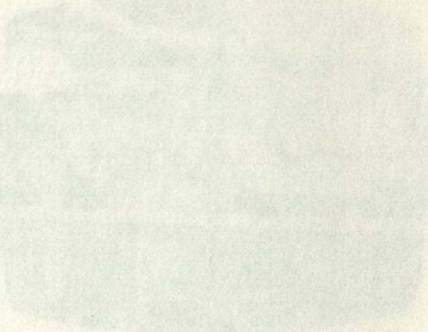

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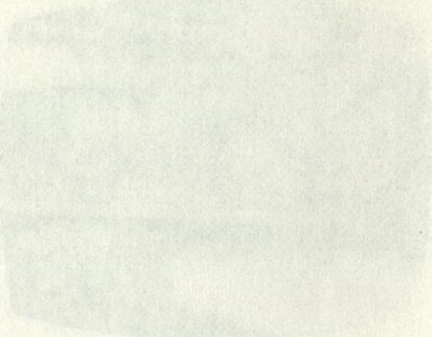

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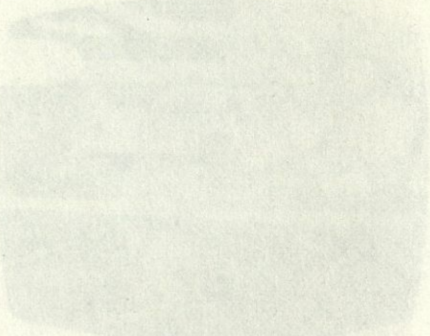

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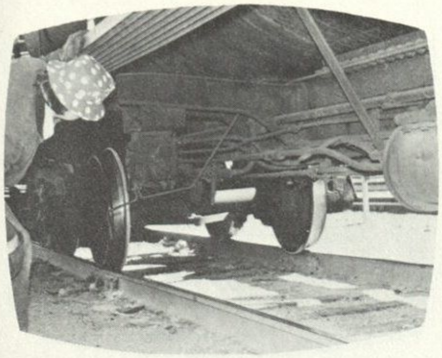
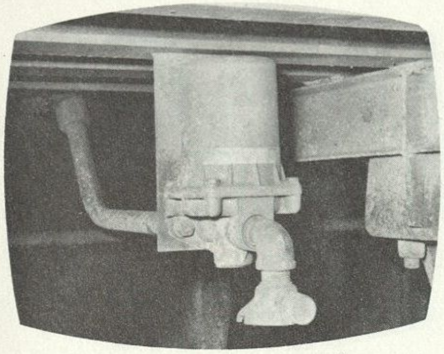
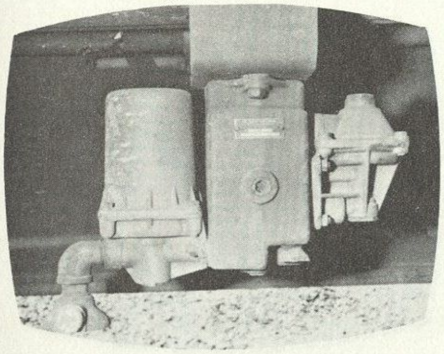


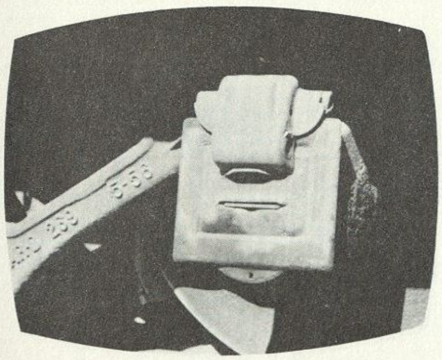
Check the cars on either side of the cut-out car to insure that the air is cut in on those cars. Not more than two consecutive brakes in a train may be cut out and still maintain emergency action throughout the train. . .



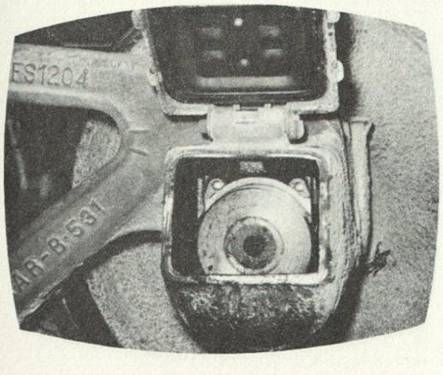
. . .unless the car is equipped with a Number Eight vent valve. . .



. . . or an A-1 reduction relay valve. The proportion of air brakes in operation must at no time be less than eighty-five percent of all cars in a train. On ascending grades, rear car must have an operative air brake.



In your walking inspection, check the journal boxes. Usually odor or the sign of smoke can indicate a defect here. If odor or the sign of smoke is detected, . . .



. . . lift the journal box lid for close inspection to see if the wedge is in place.

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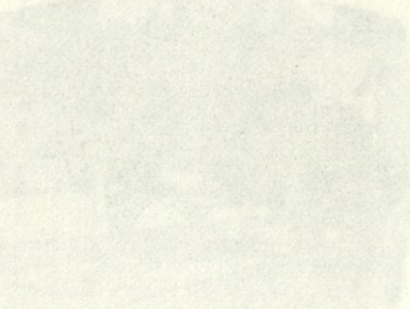

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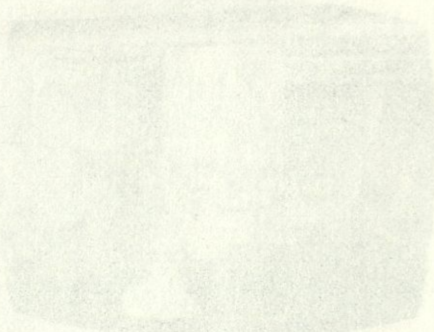

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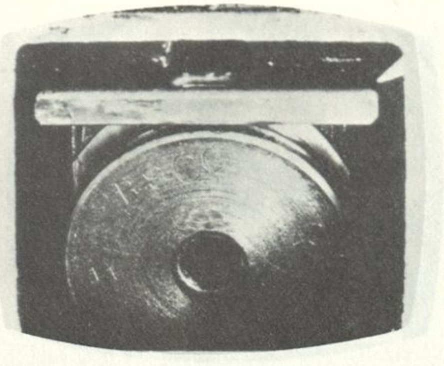
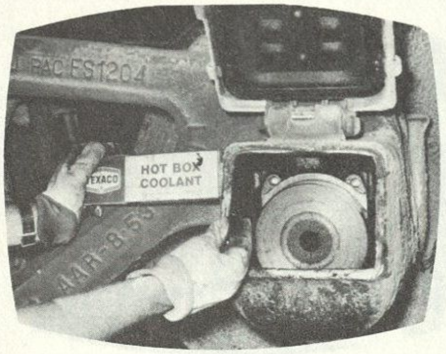
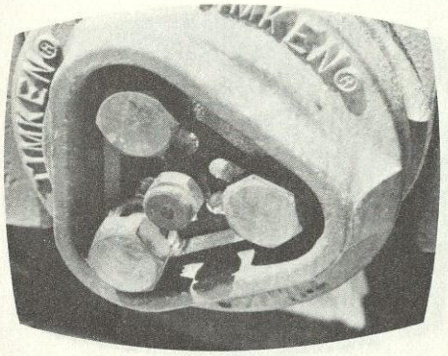


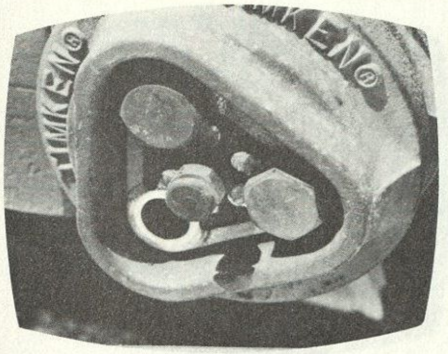
Also, examine the journal box for ample oil. This can be determined by squeezing the lube pad or looking for free oil at the bottom of the box.



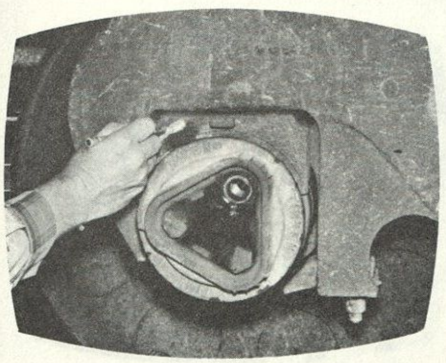
If the journal box is hot, hot box coolant can be used to cool the journal which will allow you to move the car to a spur for set out.



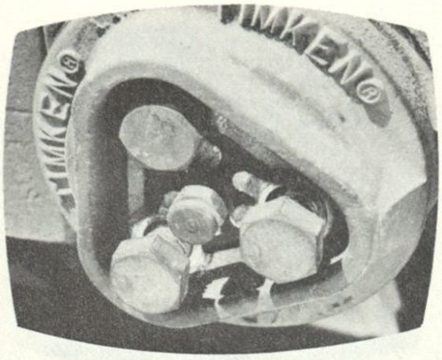
Check for loose, . . .



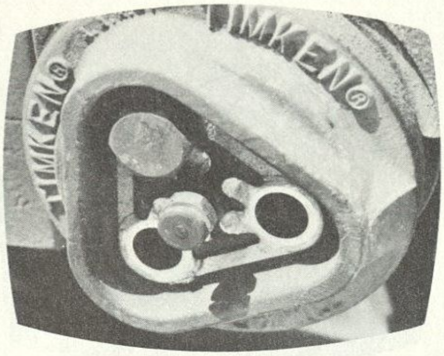
. . . or missing cap screws on roller bearings. If a bearing is found with one cap screw loose or missing and a hot box detector has not been activated, . . .



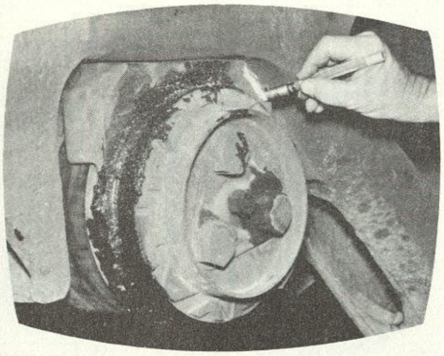
. . . make a tempil stick test, applying the tempil stick to the adapter as shown here. If this reveals no overheated condition, the train may proceed to the next terminal to set the car out.



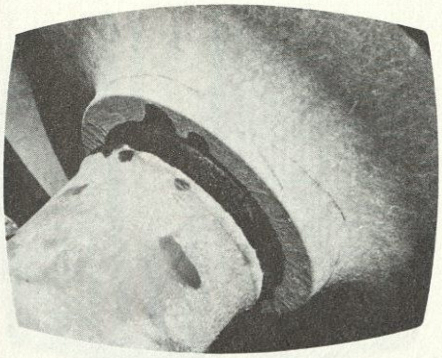
When two or more cap screws are found loose,...



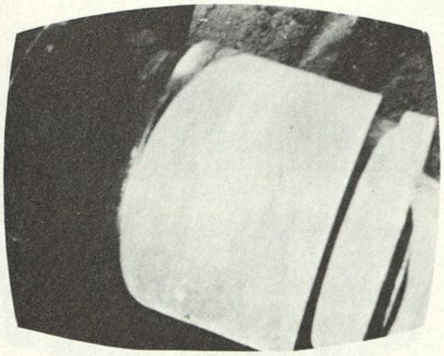
. . . or missing, the car must be set out as soon as possible.



Check for excessive grease leaks on the bearings. Use a tempil stick on the roller bearing adapter for the heat test.



Another defect which could cause a derailment is a loose wheel. This is indicated by oil seepage found on the axle and wheel hub. The car must be set out.



On a roller bearing wheel, the area where the wheel is pressed on the axle will be bright and shiny. Set the car out as soon as possible.

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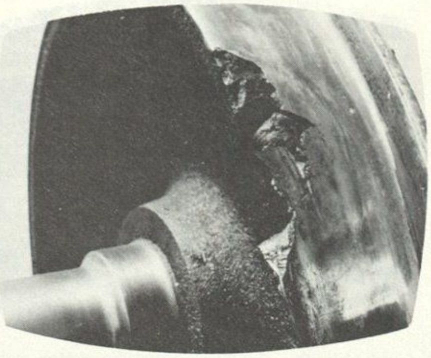
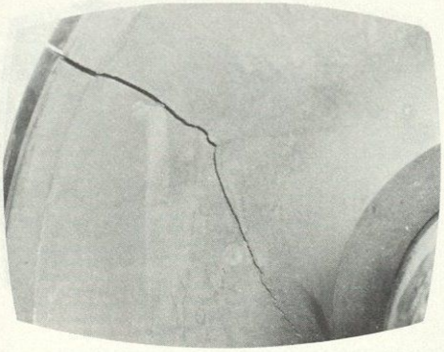
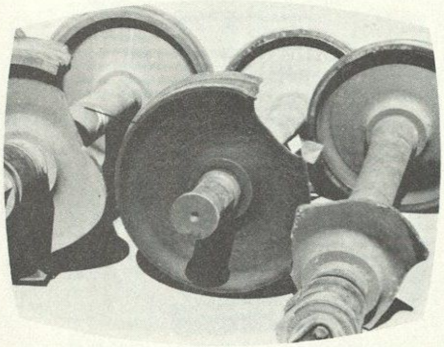


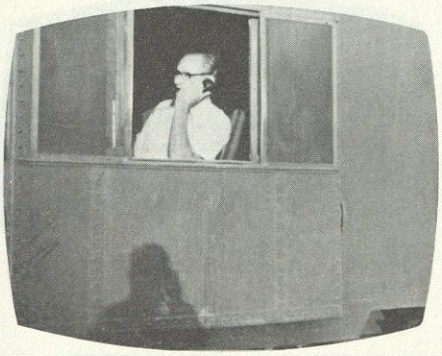
Broken wheels and cracked wheels are extremely dangerous and must be set out immediately.



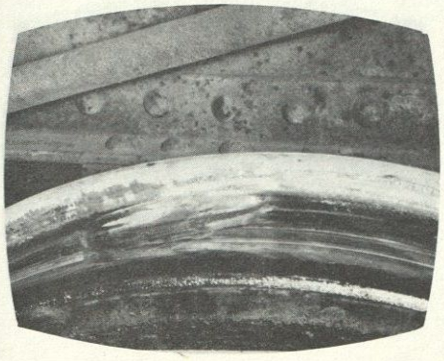
Excessive heat presents a wheel tread hazard. This thermal crack is a prelude to total wheel failure.



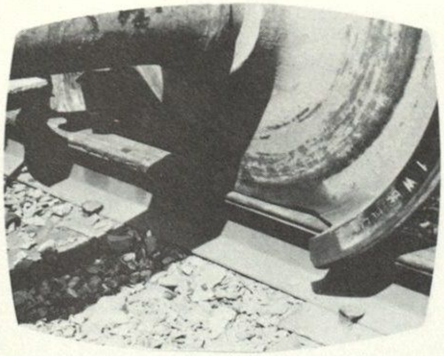
Here are three wheels that failed; all were the cause of derailments. If you find a broken wheel on your train, or find a piece of wheel or flange on the right-of-way that did not come from your train, . . .



. . .your train dispatcher must be immediately notified so that inspections can be made of all trains that passed over the track in either direction. Bring the piece of wheel or flange with you and turn it in to the operating officer.

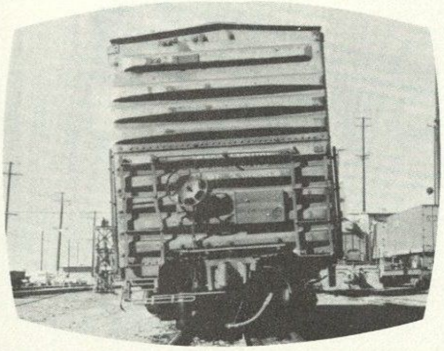


Sticking brakes on a car can cause a wheel to be flattened, as shown here. A thumping sound from a moving car is an indication of this condition....Check for thermal cracks in the tread and extending through the wheel plate and into the wheel hub in either direction.

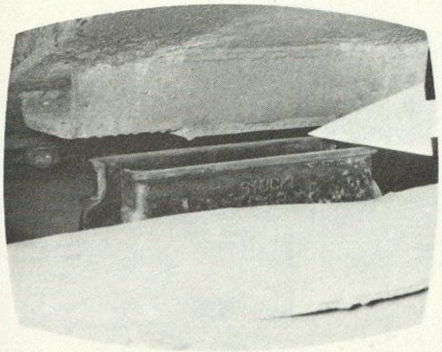


If the wheel has failed completely <u>on track</u> and cannot be moved, notify the dispatcher and ask for assistance.

While inspecting wheels, do not overlook the wheels on the locomotive. They could also have defects similar to freight car wheels.

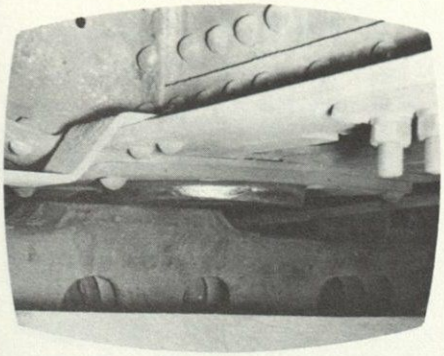


A listing car is an indication that a side bearing may be missing or broken.

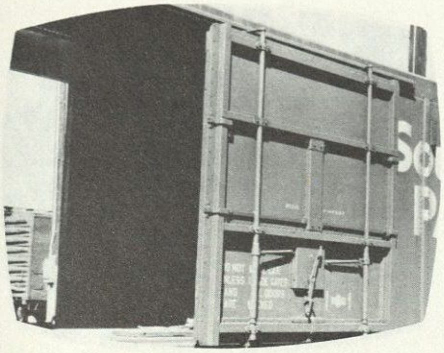


Check under the car for missing roller or broken side bearing.

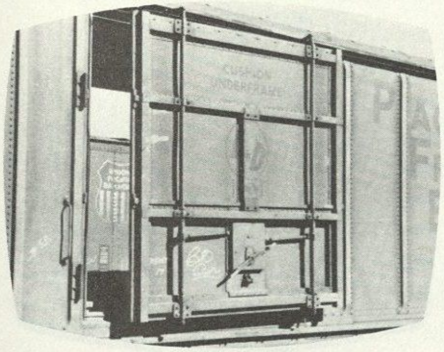
Develop a keen eye. This car is twelve inches off center. If you suspect a car is off center, . . .



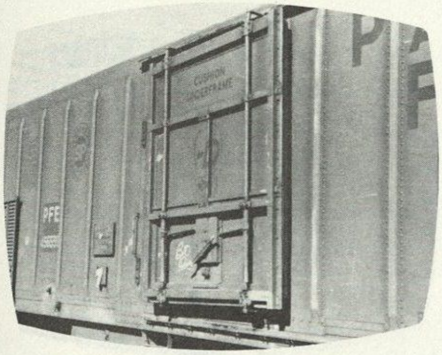
. . . look under car to see if center plate is out of truck bolster center plate casting.



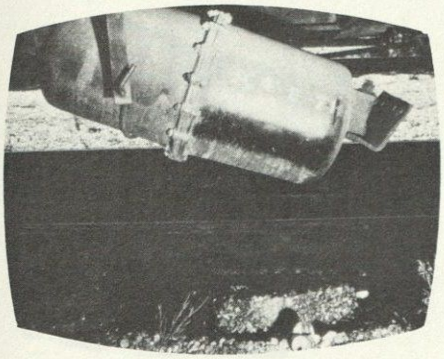
Cars with plug doors in the open position can move in the door runners and fall onto the track, causing a derailment. They can also fall onto crew members or employes of shippers and could cause serious injury or death.



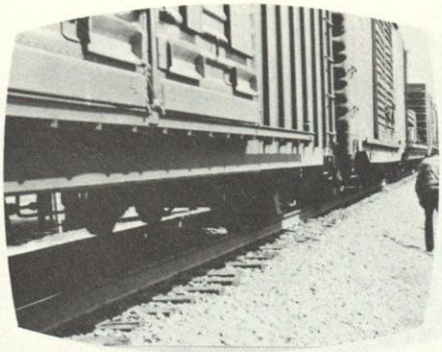
If a door is found open, try to secure it. Use caution and check to assure it is not out of the runners or brackets.



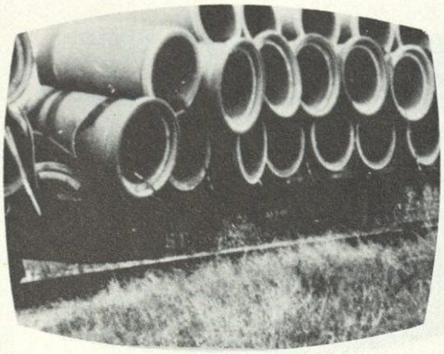
If the door is partially out of the top retainer, . . . set the car out as soon as possible. Notify all concerned personnel as to the condition of the unsecured door.



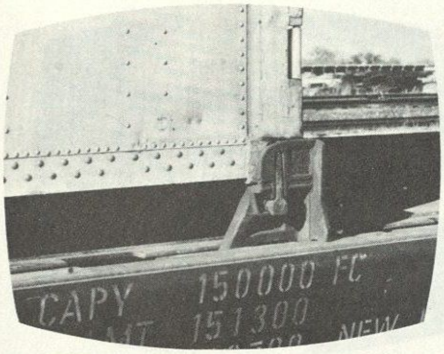
A missing reservoir bolt or broken bracket might cause the reservoir to drop to the ground or right-of-way and result in a possible derailment. This car should be set out.



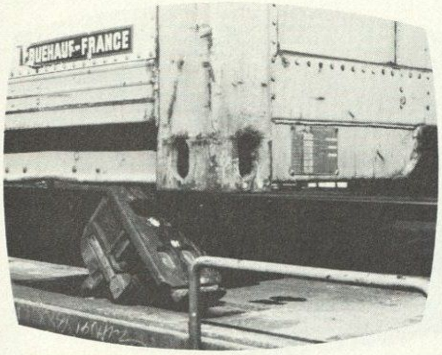
While on your walking inspection, listen for excessive air leaks from air hoses, gaskets, and compression fittings.



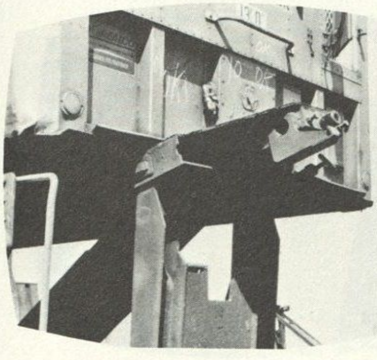
A sideways or lateral shift of lading could result in lading loss and present a derailment hazard. If shifting is excessive and is a hazard to passing trains, . . . set the car out.



As we are handling more containerized freight now, it is important that this equipment be inspected closely. This container is in the locked position.

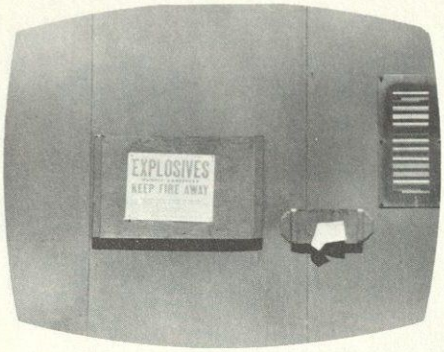


This container has completely moved out of the lock and is resting on the locking device. This car must be set out.



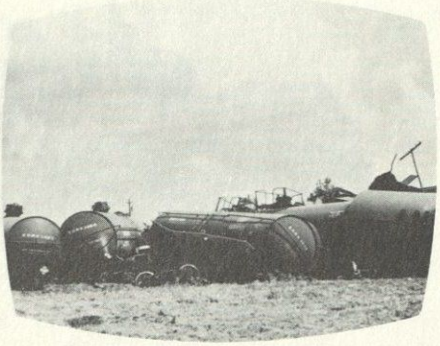
If a piggyback has moved forward or backward as shown here, check to see if the trailer kingpin has moved out of the locking jaws of the hitch or the fifth wheel. Do not attempt to move the kingpin back into fifth wheel. Set the car out.

When trailer wheels have moved on the outside of the rub rails, this calls for the car to be set out.

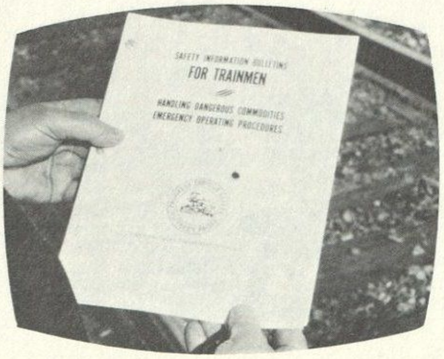


Cars bearing placards denote that they carry hazardous materials. Materials that are explosive, . . .

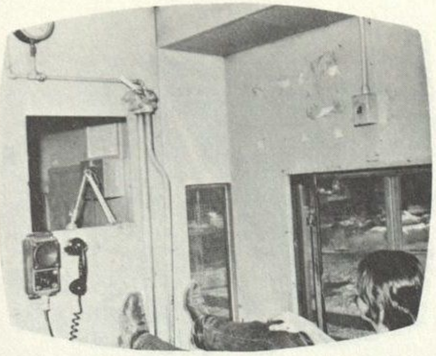
. . . flammable, poisonous, or otherwise hazardous must be given careful inspection at all points where train inspection is made. Conductors and trainmen must know their placement in the train.



Should a train derail carrying these hazardous commodities, . . .



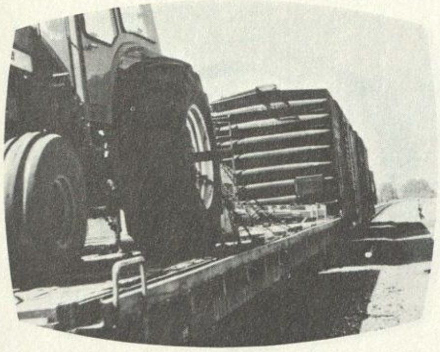
. . .trainmen must refer to these Safety Information Bulletins on handling hazardous commodities during emergency operating procedures. They are kept in the conductor's desk drawer for use in the event of an emergency.



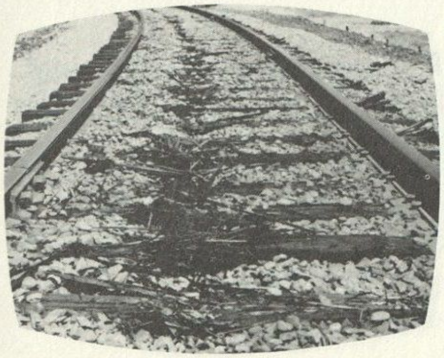
At any time a train in motion has emergency application of air brakes for any cause, . . .

Before you inspect your train, . . .

. . . you must immediately display stop signals to trains on adjacent tracks in both directions.

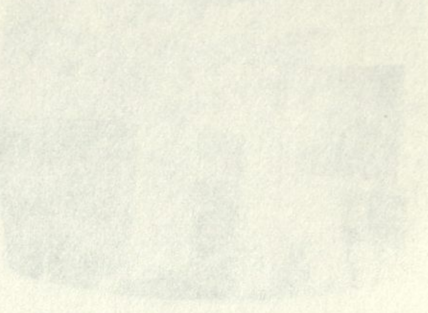


Before proceeding, an inspection of train must be made on both sides to determine if all wheels are on rail and no damage or defects in track or structures exist which will interfere with safe movement of train.



A crew member must inspect the track and structures behind the train to look for marked-up track, damaged structures, or cross ties. If fresh marks are found, the cause must be determined before proceeding, as this is an indication of derailment or dragging equipment.

At any time a train in motion has emergency application of air brakes for any cause. . . .



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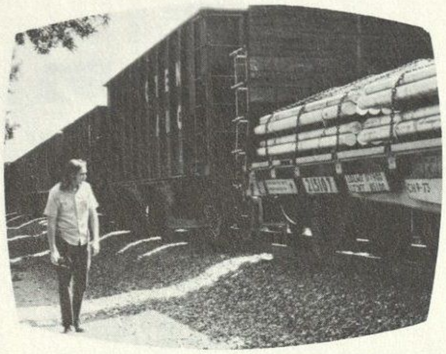
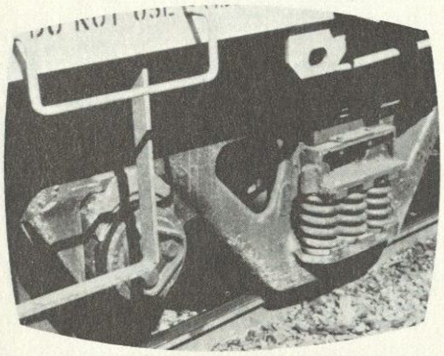
A crew member must inspect the track and structures behind the train to look for marked-up track, damaged structures, or cross ties. If fresh marks are found, the cause must be determined before proceeding, as this is an indication of derailment or dragging equipment.

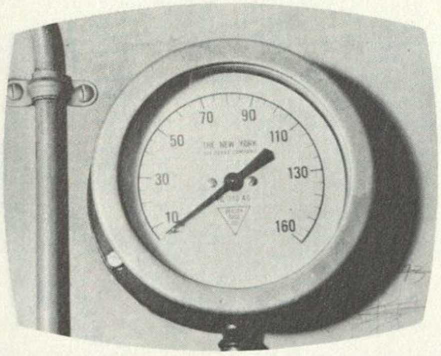
Also, if rough spots, broken rail, or other defects to track or roadbed are noted that will interfere with the safe passage of trains at normal speed, they must be reported to the dispatcher. If train dispatcher cannot afford protection, the train crew must do so.



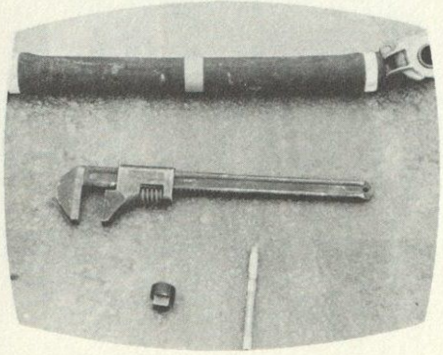
Start your walking inspection to check for possible wheels off track, . . .



. . . dragging equipment, or other defects about the cars, track, or structures. If no defect or other unsafe condition is found, the train may proceed.

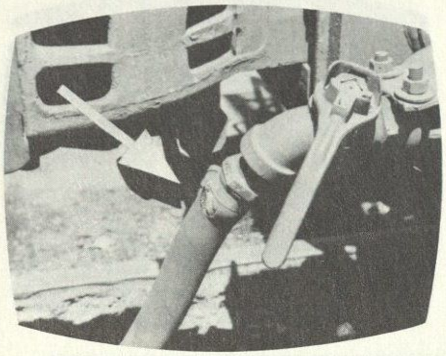


When air cannot be restored, it is an indication of a ruptured air hose or some other break in the train line.

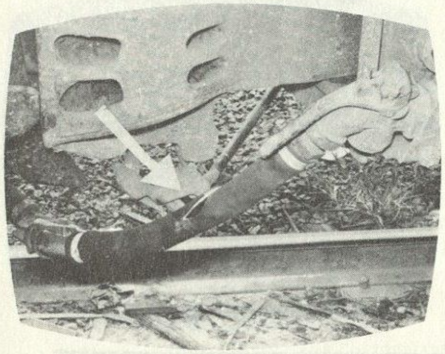


Take along an air hose, wrench, number eight vent valve plug, and tempil stick. These items are carried in the caboose; . . .

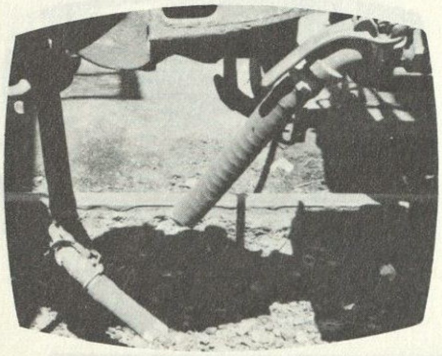
. . . and by taking this equipment with you, it will save the delay of having to go back and get it.



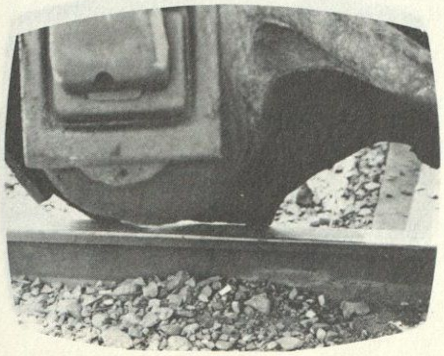
A small fatigue rupture, as shown here, may be the cause of the problem. Make your air hose change and complete the inspection.



When an air nose has been cut, . . .

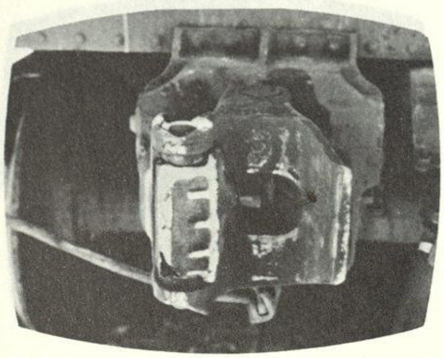


... or severed by some flying object, . . .

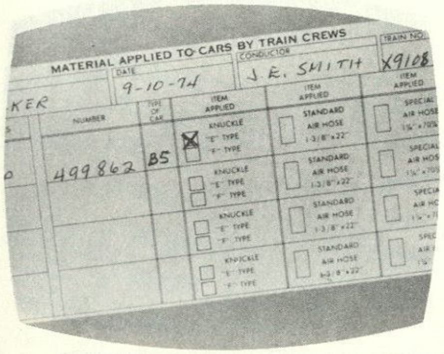


...a careful inspection must be made of the car on each side to determine if any parts of the running gear are missing or broken... An inspection of the remaining portion of the train must then be completed.

This cracked knuckle could fail completely, and should be replaced.



A break-in-two could result in derailment. If you change an air hose or knuckle, . . .



MATERIAL APPLIED TO CARS BY TRAIN CREWS

DATE 9-10-74

CONDUCTOR J. E. SMITH

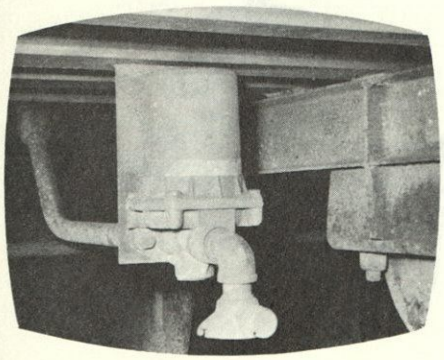
TRAIN NO. X9108

KER

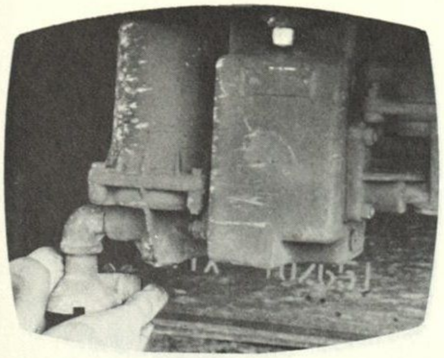
NUMBER	TYPE OF CAR	ITEM APPLIED	ITEM APPLIED	ITEM APPLIED
499862	BS	KNUCKLE ☒ "E" TYPE ☐ "F" TYPE	☐ STANDARD AIR HOSE 1-3/8" x 22"	☐ SPECIAL AIR HOSE
		KNUCKLE ☐ "E" TYPE ☐ "F" TYPE	☐ STANDARD AIR HOSE 1-3/8" x 22"	☐ SPECIAL AIR HOS
		KNUCKLE ☐ "E" TYPE ☐ "F" TYPE	☐ STANDARD AIR HOSE 1-3/8" x 22"	☐ SPECIA AIR HO
		KNUCKLE ☐ "E" TYPE ☐ "F" TYPE	☐ STANDARD AIR HOSE 1-3/8" x 22"	☐ SPEC

... make out Form CS-2382, and follow instructions on the reverse side.

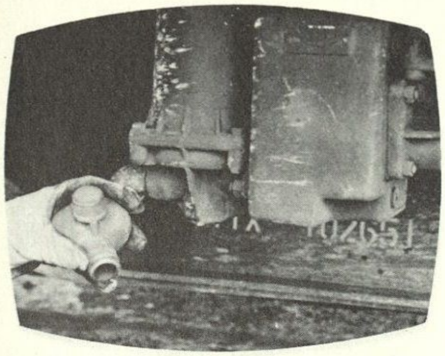
If a drawbar is pulled from a train...before proceeding, locate the missing part and remove it. It could cause a derailment if left between the rails.



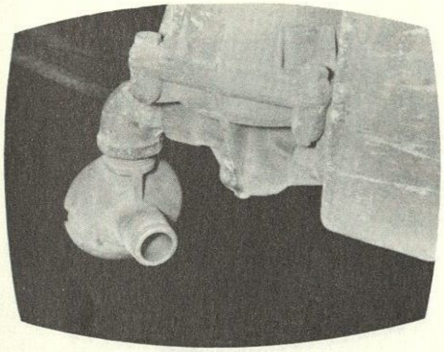
Number eight vent valves may occasionally malfunction as a result of emergency, causing a leak in the train line.



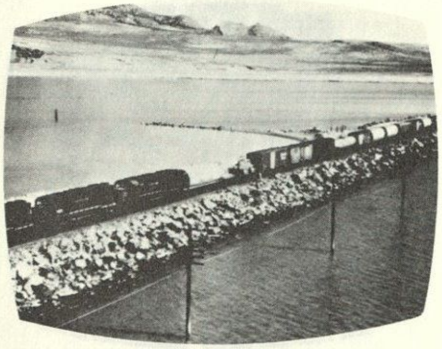
If this occurs, remove the vent valve protector, . . .



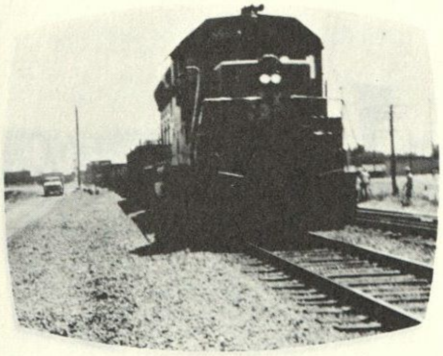
. . . and seal the valve opening off with a plug.



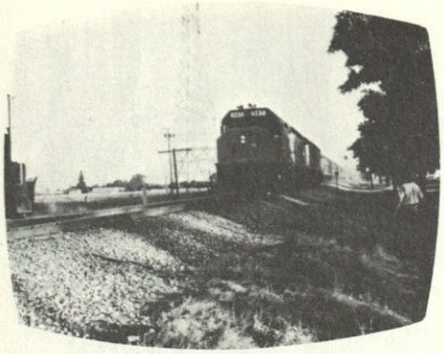
Plugs are carried in the caboose or are a part of the number eight vent valve, as shown here.



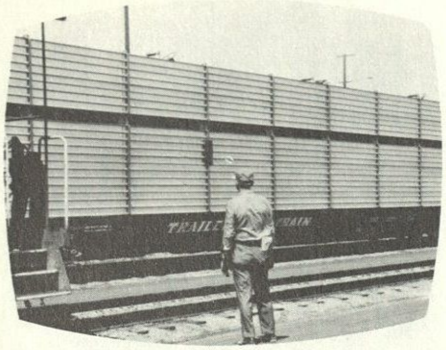
At any time where there is an emergency application of brakes, the train dispatcher must be notified of the location so that the roadmaster or his representative can inspect the track for possible damage.



All employes have the responsibility to observe passing trains closely, looking for dangerous conditions. If a dangerous condition is noted, a stop signal must be given to the crew members on passing train. Therefore, you must be on the alert to observe employes who are rolling your train.

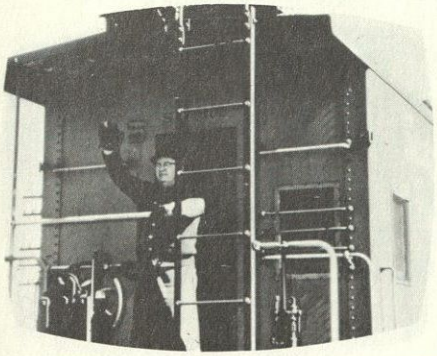


When your train stops to be met or passed by another train, the crew member on the head end must take position and make a rolling inspection from the ground on the side opposite his train.

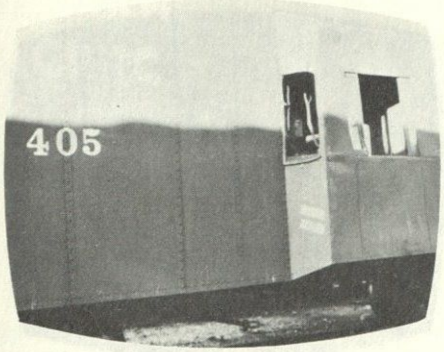


A crew member on the rear of the standing train must inspect the side adjacent to his train.

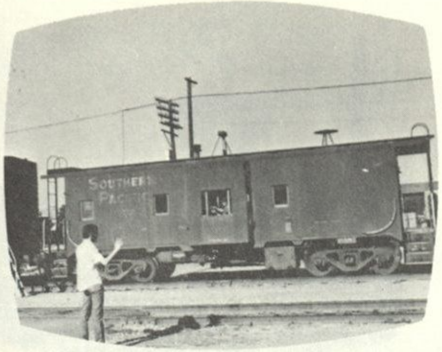
At meeting or passing points when neither train stops, a crew member must be on the rear platform of the caboose to make a rolling inspection of the passing train and be in position to observe the signals that may be given by the crew of either train.



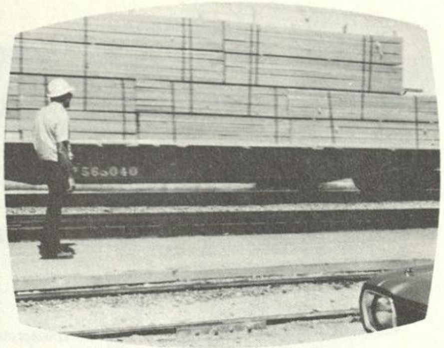
If nothing irregular is noted, crew member will give a proceed signal as an indication they have observed the train and noted nothing dangerous.



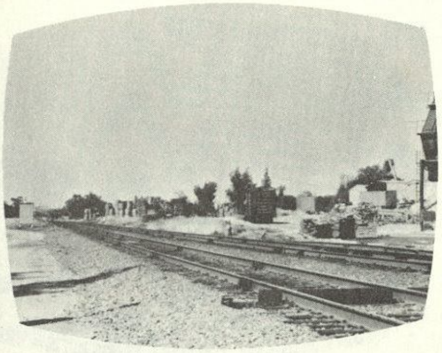
When making an inspection of a passing train, you must not remain in the bay window of caboose. In this case, a piece of pulpwood from the passing train came loose and went through the window.



Other employes, such as train order operators. . .

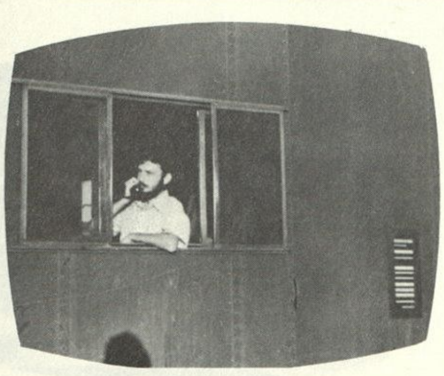


. . . and signalmen must observe moving trains to detect dangerous conditions and be in position to give signals to train crew members if any are spotted.



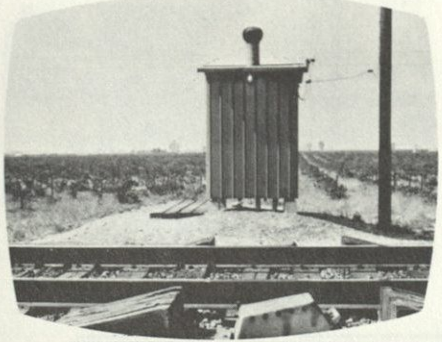
When on train and passing over dragging equipment detectors, . . .

. . . engine and train crews must communicate to each other the exact location of these detectors and be on the alert for any indication of dragging equipment. The engineer must inform the conductor when the train is approaching a hot box detector.

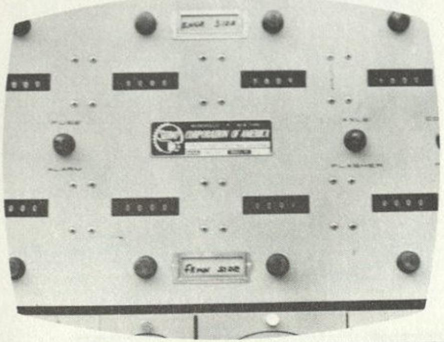


The conductor must acknowledge and advise the engineer of the indication displayed. Absence of a white light must promptly be reported to train dispatcher. If the detector is activated, appropriate action according to Rule 705 in your Special Instructions is necessary.

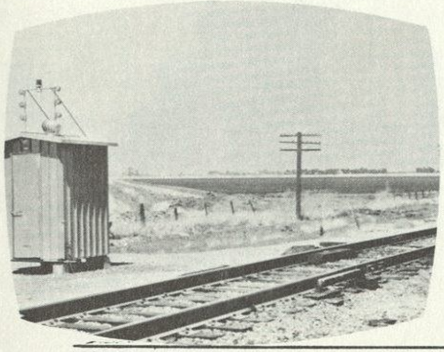
These are four types of hot box detectors: . . .



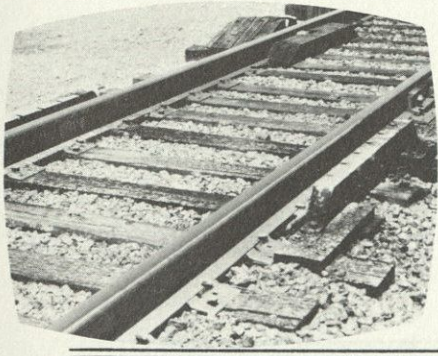
On this detector, Type A, if a hot bearing cannot be located on the car indicated by the readout, . . .



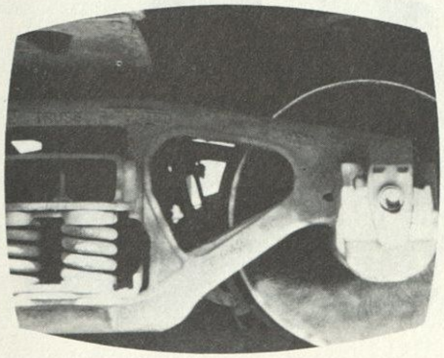
. . . all journals of the car will be inspected, as well as the five cars on either side. If this is done with no results, all journals of train must be inspected.



On a Type B detector,. . .

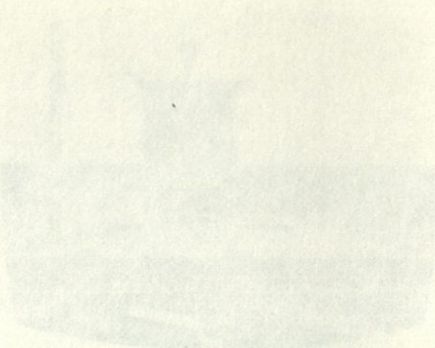


. . . the truck side of car with a hot bearing will be sprayed with fluorescent dye for identification.

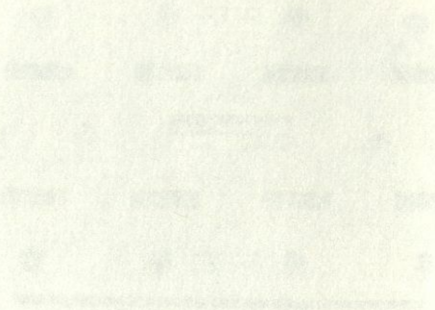


All journals of the marked car, as well as the car ahead, must be inspected. When no dye marker is observed, all journals of train must be inspected.

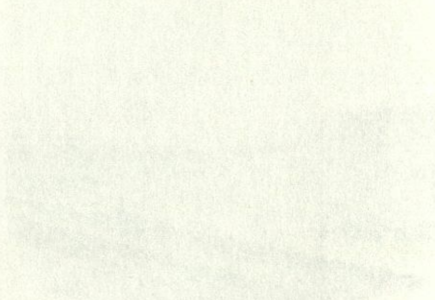
On this detector, Type A, if a hot bearing cannot be located on the car indicated by the readout, . . .



. . . all journals of the car will be inspected, as well as the five cars on either side. If this is done with no results, all journals of train must be inspected.



On a Type B detector, . . .



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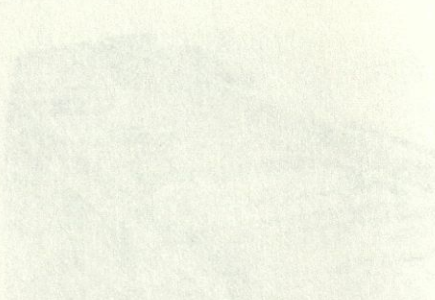
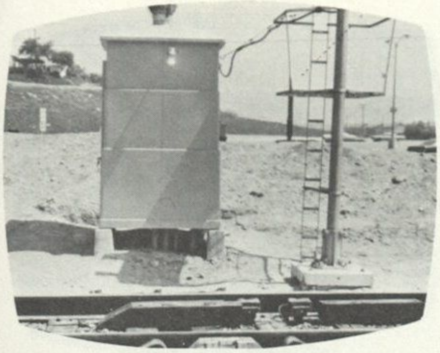
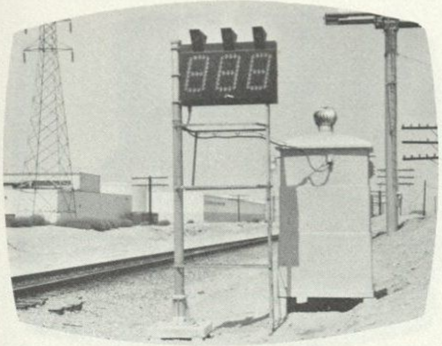


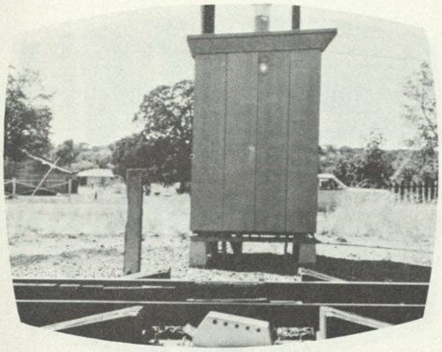
All journals of the marked car, as well as the car ahead, must be inspected. When no dye marker is observed, all journals of train must be inspected.



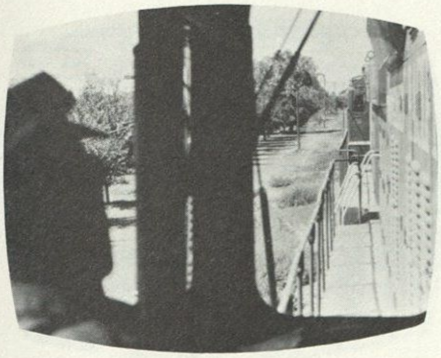
When a Type C detector is actuated, trainmen must make a physical count of axles from rear of train to axle indicated by display board.



If the hot bearing is not located, all journals of car indicated, as well as five cars on either side must be inspected.



On Type D detectors, the readout is by recorder, located at a nearby terminal. Crew members must keep a vigilant lookout for the indicator light displayed on the track side of the instrument house. When the light is flashing, the conductor and engineer must immediately orally compare observations when a means of communication is available to them. The train must be stopped and when a means of communication is available, a crew member must contact the employe at the recorder location to determine the location of the hot bearing. If the location of the hot bearing cannot be determined an inspection must be made of all journals.



Crews on the head and rear end of train must maintain a vigilant lookout and observe their train while running.

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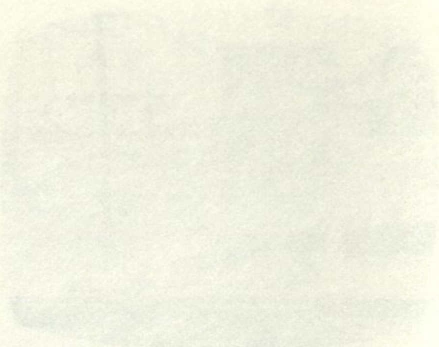

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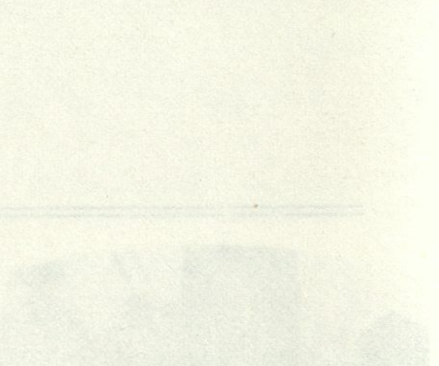
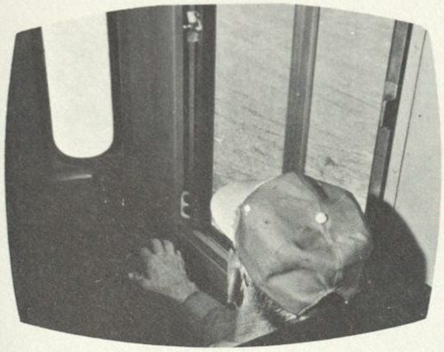
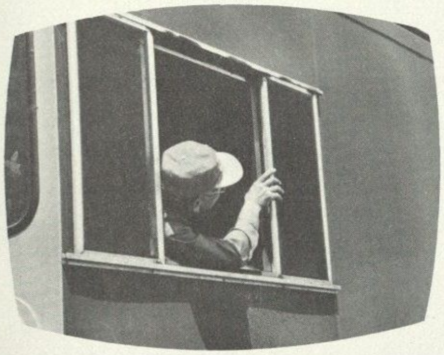


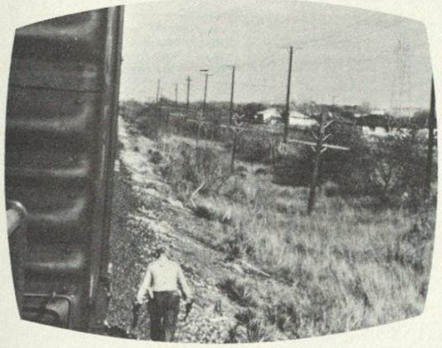
Crew members on engine must frequently look back for signals and indications of defects in train, especially while rounding curves and approaching or leaving stations.



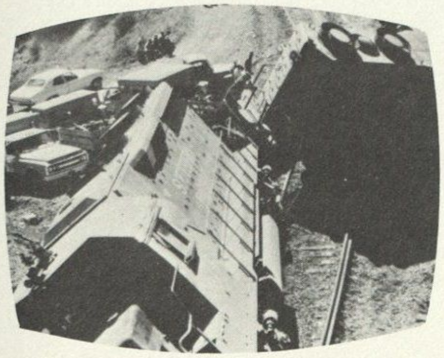
In the caboose, inspect through the front window of the bay as you go around curves.



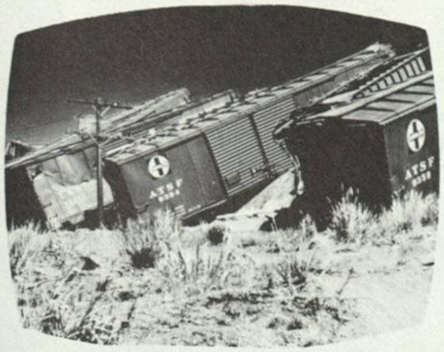
On long stretches of tangent track, it is necessary to lean out of the bay window periodically to get a good view of your train.



Remember, your thorough inspection is the key to early detection of mechanical defects and dangerous conditions which cause train separation and derailments.



Be on the constant lookout for unusual conditions that may be a warning of impending danger.



Make your inspections as though your life depended on them -- It very well could.

NOTES:

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